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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/748,589	12/22/2000	Thomas H. Lee	10519/9	2666

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EXAMINER

PORTKA, GARY J

ART UNIT	PAPER NUMBER
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2188

DATE MAILED: 02/02/2004

38

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

09/748,589

Applicant(s)

MARCH ET AL.

Examiner

Gary J Portka

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 December 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 125-140 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 125-140 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 30.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Misnumbered claims 125-140 been renumbered 126-141.

2. Claims 114-125 have been canceled, and claims 126-141 have been added by Applicant. Claims 126-141 are pending.

Claim Objections

3. Claims 126, 130, and 135 are objected to because of the following informalities: The limitation of a memory array comprising a plurality of memory cells arranged in a plurality of layers (stacked vertically above one another) does not require 1) a plurality of arrays, each being a layer, or even 2) that a cell makes up a layer. It may be read as each cell containing plural layers within itself. The claims should be amended to preclude this interpretation. Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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5. Claims 126-135 and 138-141 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang, U.S. Patent 5,835,396 (hereinafter "Zhang") in view of Leedy, U.S. Patent 6,208,545 B1 (hereinafter "Leedy"), or alternatively over Johnson, U.S. Patent 6,034,882 (hereinafter "Johnson") in view of Leedy.

6. As to claims 126 and 128, both Zhang and Johnson teach a 3-D write-once memory device including support element carrying a memory array comprising a plurality of cells arranged in layers, without bonding material between the layers (see Zhang Abstract, Figs. 1, 4, 5, and 6, and col. 1 lines 14-16 and 63-67, col. 2 lines 1-9 and 16-26, and col. 10 line 49 to col. 11 line 28; see Johnson Abstract, Figs. 4 and 5, and col. 1 lines 14-60, col. 4 lines 11-22, col. 12 line 42 to col. 13 line 25, col. 16 lines 4-20, and col. 18 lines 32-36; also as stated by Applicant at page 37 of the previous response). Neither Zhang nor Johnson disclose ECC circuitry carried by the support element. However, such an arrangement is disclosed in the analogous 3-D array of Leedy (see Leedy Background, Fig. 2C, and col. 6 lines 61-66). Clearly the ECC circuitry of Leedy is not a specific requirement for a 3-D memory with bonded layers, but rather as well known in the art allows for correction of errors which may become more prevalent in a denser memory circuit, such as any 3-D memory. Thus it would have been obvious to one of ordinary skill in the art at the time of the invention to add ECC circuitry to the memories of Zhang and Johnson, because it was known to add this circuitry to the support element of high density 3-D memory arrays so that they could benefit from its error correction capabilities.

7. As to claim 130, the prior art combination teaches the method substantially as described above with regard to claim 126; the ECC of Leedy inherently has at least one data bit and one generated ECC bit stored in the array.

8. As to claim 131, the prior art combination teaches the method substantially as described above with regard to claim 126; it is inherent for ECC circuitry to retrieve the data and ECC bit as recited and to identify an error.

9. As to claims 135, 138, and 140, the prior art combination teaches the method substantially as described above with regard to claim 126; any device might be considered releasably coupled to the extent claimed.

10. As to claims 127, 132, 133, and 139, the devices of the above prior art combination may be considered protective housings to the extent claimed.

11. As to claims 129, 134, and 141, the devices of the above prior art combination is selected from the recited group since it is semi-conductor based.

12. Claim 136 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang in view of Leedy,, and further in view of Hayashi, U.S. Patent 5,708,667 (hereinafter "Hayashi"), or alternatively over Johnson in view of Leedy, and further in view of Hayashi.

13. As to claim 136, the Zhang-Leedy or Johnson-Leedy prior art combinations do not disclose that the ECC generator is implemented in software. However, the implementation of ECC in software was well known in the art; Hayashi describes an ECC implemented in software, as shown in Figure 1 and described at column 3 line 11 to column 4 line 13, and at column 7 lines 37-39. An artisan is well aware of the

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advantages of updatability and adaptability provided by an implementation in software, and these advantages would have motivated one to implement the ECC of the prior art combination in this manner. Thus it would have been obvious to one of ordinary skill in the art at the time of the invention to implement the ECC in software, because this is well known and provides the system adaptability and updatability.

14. Claim 137 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang in view of Leedy, , and further in view of Anderson, U.S. Patent 6,321,358 B1 (hereinafter "Anderson"), or alternatively over Johnson in view of Leedy, and further in view of Anderson.

15. As to claim 137, the Zhang-Leedy or Johnson-Leedy prior art combinations do not disclose the ECC generator is part of the file system. However, it was well known to incorporate the ECC with the file system for a storage device, see Anderson Figure 31 and column 22 line 64 to column 23 line 10. An artisan would have recognized the advantage of compatibility with existing file systems implementing ECC to make the ECC generator part of the file system in the implementation of the device in the prior art combination. Thus it would have been obvious to one of ordinary skill in the art at the time of the invention to implement the ECC generator as part of the file system, because this would make of the device of the prior art combination useable with known file systems which incorporate ECC generation.

Response to Arguments

16. Applicant's arguments filed December 22, 2003 have been fully considered but they are not fully persuasive.

Applicants arguments regarding the Shimoda reference are convincing.

Applicants arguments regarding Leedy, Zhang, and Johnson amount to the assertion that there is no suggestion to combine the teachings of these references to yield the claimed invention. Examiner disagrees to the extent these limitations are claimed, as more fully described in the rejections above. It is noted that the claims do not require the ECC circuitry be deposited without bonding material, as for the memory cell layers, only that it be carried by the support element (for claims 126 and 130), or that the system comprises ECC functionality (for claim 135).

Conclusion

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gary J Portka whose telephone number is (703) 305-4033. The examiner can normally be reached on M-F 9:30 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mano Padmanabhan can be reached on (703) 306-2903. The fax phone number for the organization where this application or proceeding is assigned is (703) 746-7239.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 305-3900.

Gary J Portka
Primary Examiner
Art Unit 2188



February 2, 2004